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5. Summary (2-3 lines indicating the major subject(s) of the document): Report on the routine study of biological samples, water samples and ecological samples; whole body counts; chemical interference studies in the combined Ra, Ac & Th procedure and the new paper published.

6. Name and telephone number of person completing form:	7. Organization:	8. Date:
Anjan K. Majumder (208) 525-0206	Lockheed Idaho Technologies Co.	MAY, 1995

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HUMAN RADIATION EXPERIMENTS

RECORDS PROVENANCE FORM

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CROSS REFERENCES:
ITEMS OF INTEREST:

* A NEW COLLECTION NAME REPLACED THE ORIGINAL DUE TO REORGANIZATION OF RECORD SERIES

August 25, 1969

George L. Voelz, M.D., Director
Health Services Laboratory

MONTHLY ACTIVITY REPORT - ANALYTICAL CHEMISTRY BRANCH
July 21, 1969 - August 20, 1969

ROUTINE

Biological Samples (urine, feces, soil, etc.)	461
Water Samples (potable, effluent, etc.)	524
Air & Dusts (carbon cartridges, filters, etc.)	627
Whole Body Counts	45

RESEARCH

Continued studying the decrease in Rn 222 concentration of air stored in old Mylar bags and began a study on the retention of Rn 222 in new Saran bags. Two postulated mechanisms of loss are: (1) The "preferential" diffusion and/or dilution of Rn in the bag and (2) a net decrease in sample volume.

Carried out some chemical interference studies in the Combined Ra, Ac, & Th Procedure. Found no serious interference from reasonably high quantities of Ce, Ta, Os, Zr, P_2O_5 and Y. These experiments will be continued using variable quantities of La. Also continued research on Thorium-4',3,7 trihydroxyflavone by studying interferences from other elements.

Began research on nitrate electrodeposition. Yields of 100% were obtained, even in the presence of 250 µg iron.

Started an investigation into the possibility of using higher gain settings for counting Sr 90 and Sr 89 by liquid scintillation. This would also allow for a lower background because the first 200 discriminator divisions could be eliminated without a large drop in counting efficiency. More than half of the background in the Sr 90 channel appears in the first 200 divisions. Also worked on a background study and its relation to channel settings. Started a study on the feasibility of using the TMC pulse height analyzer for obtaining spectra of Sr 89 and Sr 90 and their relation to various gain and channel settings.

The program RATIO is operational. This program is used to process data accumulated in the investigation of methods to determine the depth of gamma activity in the body. The program for reducing gamma-ray spectra

to quantitative values is now operational on the 360 computer. The program for producing isometric plots to show positions of different isotopes in different organs of the body has been tested by use of a phantom. A list of radioactive elements to be recommended for internal exposures of human volunteers has been prepared. The research is needed to complete the test of our capacity to assess quantity and location of specific nuclides in the body.

SPECIAL ACTIVITIES

The paper entitled "Radiochemical Determination of Uranium and the Transuranium Elements in Process Solutions and Environmental Samples" by Claude W. Sill and Rodger L. Williams has been accepted for publication in Analytical Chemistry. Tentative date is the October 1969 issue.

The new Series 50/50 Data Acquisition & Processing System has been installed and is being used in connection with research projects, the Independent Measurements Program, and NRTS Radiochemistry Programs.

WHOLE BODY COUNTING ACTIVITIES

Whole body counts at the Laboratory were as follows: 13 routine, 24 termination and 8 others.

Claude W. Sill, Chief
Analytical Chemistry Branch
Health Services Laboratory